

CONTENTS

Bylinkin S. F., Vavilov V. D., Vavilov I. V., Kitaev I. V.
*The Development and researches of Microsystem
Accelerometers* 2

The results of theoretical and experimental researches conducted during the process of creation of the serial models of accelerometers are presented. They are established the mathematical models of accelerometers as electromechanical systems in the form of transfer functions with regard for the peculiarities of the construction and the applied materials. The relations for errors estimate of accelerometers from the influence of the different physical actions are described.

**Soloshenko A. N., Ovtchinnikova G. I., Pirogov Yu. A.
and Novik V. K.** *Defects Relaxation in Microwave Irradiated
Triglycine Sulphate* 6

It has recently been shown that the exposure of TGS monocrystals to microwave radiation (40 GHz) of power density not more than 10 mW/cm² reduces the dielectric constant singularity at the phase transition. In this paper the results of investigations of irradiated crystals dielectric relaxation towards initial conditions are presented. The features caused by two types of excited defects are stated. Two relaxation time constants are determined.

Shilyaev P. A., Pavlov D. A., Khokhlov A. F., Shengurov V. G.
*Correlation Between Fractal Dimension and Properties
of Poly-Si Surface* 10

By example of poly-Si thin films produced by molecular beam deposition we studied the correlation between surface geometry and tribological and hardness properties of surface. By means of AFM we explored the topography, friction between cantilever and the surface (in lateral force mode) and the local hardness (in z-modulation mode).

Applying "lake filling" algorithm to lateral force and micro hardness images it was shown, what local value of the friction and hardness depend on Fd of this regions. The regions with high Fd were less harder and had the friction was higher. We supposed what the structure of near surface layer which define all properties of the surface can be evaluated by Fd.

The experiments showed the possibility of using Fd for describing not only the geometry of surface but for the characterization of the near surface layer structure and thereby all properties of surface which are sensible to the structure.

Slesarev Yu. N. *The Dynamic Models of Self-Consistent Media
During Thermomagnetic Recordings* 13

An improved self-consistent model of thermomagnetic recordings are presented, which describes the dynamic process of recording and erasing information. The model takes into account magnetization on magnetic loops and transfer functions of recording materials.

**Shiljko S. V., Starzhinsky V. E., Babin A. P., Zernin M. V.,
Shalobaev E. V.** *The Singularities of the Conjunctions Calculation
of MEMS Components* 16

The singularities of deformation-strength conjunctions calculation of MEMS agreed upon scale factor and the technology of preparation are analyzed. The original algorithms and programs are developed on the basis of the methods of the boundary and finite elements for analysis of strength deformed state of microconjunctions.

**Pankratov V. M., Dzhashitov V. E., Ulybin V. I., Mokrov E. A.,
Semenov V. A., Tikhomirov D. V.** *The Mathematical Models
of Pressure Transmitter Functioning for Cosmic Aircrafts
at Nonstationary Measured and Ambient Temperature* 20

The questions connected with the structure and automated research of mathematical models of pressure transmitters working in nonstationary inhomogeneous temperature fields of measured and ambient mediums are considered. The mathematical models of nonstationary thermal processes flowing in the transmitter and mathematical models of thermoelastic strength deformed membrane condition of receiving transmitter element are constructed and investigated. The formulated problems solution permits to calculate and analyze the inhomogeneous nonstationary temperature fields and full strength deformed transmitter condition.

Prinz V. Ya., Seleznev V. A., Chehovskiy A. V. *Self-formed
Semiconductor Micro- and Nanotubes* 29

The original results in the area of the preparation and research of semiconducting micro- and nanotubes are presented. The technology of the preparation of micro- and nanotubes with precision diameter and length is described. The tubes with diameter in the range from ≈2 nm to 100 mkm are got experimentally. The possibilities of the practical use of the created micro- and nanoobjects are considered.

Obukhov I. A. *About Possibility of the Use of STM-APM
for Creation of New Types of Quantum Devices* 34

Analyses requirements to lithography resolution which is necessary for creation of the new type of quantum devices: relaxation quantum diode and transistor.

Using a modern nano-lithography on basis of STM-APM production of these devices is real.

Подписку за рубежом принимают:

**For foreign subscribers:
ЗАО МК-Периодика. E-mail: info@periodicals.ru;**

**Editor-in-Chief Ph. D. Petr P. Maltsev
Index 79493.
Address is: 4, Stromynsky Lane, Moscow, 107076, Russia. Tel./Fax: (7 095) 269-5510.
E-mail: it@novtex.ru**